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7/8/22/03PATENTIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 09/990,991 Confirmation No. 4299  
Applicants : Daniel C. Baker  
Filed : November 16, 2001  
TC/A.U. : 1734  
Examiner : George R. Koch  
  
Docket No. : PHA 51232A (VLSI.273DIV1)  
Customer : 24738  
No.

Title: Photoresist Dispense Arrangement by Compensation for  
Substrate Reflectivity

Declaration Under 37 C.F.R. §1.131

I, Peter Stephen Zawilski, hereby present the following declarations.

Before October 29, 1999, while employed as a member of the Legal Department of VLSI Technology, Inc., now Philips Electronics North America):

1. I received the Invention Disclosure for the above-named invention. This invention disclosure statement was submitted to the Legal Department before October 29, 1999, and subsequently used in the preparation of the above-referenced patent application.

2. The sole inventor prepared and signed or initialed an eight (8)-page invention disclosure statement, a true and accurate copy of which is attached hereto as an Exhibit, with pertinent dates intentionally blocked out (each date preceding October 29, 1999). This invention disclosure statement provides details of the above-named invention.

**OFFICIAL**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application of any patent issued thereon.

Signed this 12<sup>th</sup> day of August 2003 by:

Peter Stephen Zawilski  
Peter Stephen Zawilski

**TAX RECEIVED**  
AUG 14 2003  
GROUP 1700



# INVENTION DISCLOSURE FORM

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Invention Disclosure N :

3445

PHA 51232

EXHIBIT

This is a Disclosure Form for VLSI Technology, Inc. all of its related companies hereafter referred to as "COMPANY"

## Instructions:

- Use this form only if electronic versions are not accessible or available.
- Please write legibly in ink.
- Complete all sections. Attach supplemental pages and other documentation, as required.
- Any questions on how to fill out this Form should be referred to Ginny Whittier (408) 434-3056, or Peter Zawilski (408) 474-5736

Return Completed Form To:

Legal Department - M.S. 45  
1109 McKay Drive  
San Jose, California 95131

Date Stamp:

Date Redacted

## 1. Title of the Invention

Write a short descriptive title, avoiding coined terms and project names.

Improved Photoresist Dispense Method By Compensation For Substrate Reflectivity

## 2. Inventors

Include names of all persons who made a contribution to the conception and/or reduction to practice of the invention.  
If there are more than five inventors, use a Supplemental Sheet.

Full Name 1: Daniel C. Baker

Mail Stop 02

Home Address: 440 Dixon Landing Road, G105

Location San Jose

Home Phone: 408-456-8991

Work Phone: 408-434-3103

Citizenship: US

E-Mail: dan.baker@vlsi.com

Supervisor: Satyendra Sethi

Department: Technology Development

Employee No.: 2466

APC Group:

Full Name 2:

Mail Stop

Home Address:

Location

Home Phone:

Work Phone:

Citizenship:

E-Mail:

Supervisor:

Department:

Employee No.:

APC Group:

Full Name 3:

Mail Stop

Home Address:

Location

Home Phone:

Work Phone:

Citizenship:

E-Mail:

Supervisor:

Department:

Employee No.:

APC Group:

Full Name 4:

Mail Stop

Home Address:

Location

Home Phone:

Work Phone:

Citizenship:

VAX Name:

Supervisor:

Department:

Employee No.:

APC Group:

Full Name 5:

Mail Stop

Home Address:

Location

Home Phone:

Work Phone:

Citizenship:

VAX Name:

Supervisor:

Department:

Employee No.:

APC Group:

Inventors' Initials

DB

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Witnesses' Initials

TX L.2.

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☐☐☐☐**3. Brief Description of the Invention (Invention Summary).** This field must be filled in or disclosure is not complete.

Describe the structure, function and/or method of the invention. Stress the fundamental principle of the new idea from an engineering standpoint. Present the idea in a nutshell. This description will be entered into the VLSI Patent Database so that your colleagues can be informed of your invention. Description should be 25 to 50 words in length.

Advanced photoresist dispense methods vary wafer rotation speed during chemical delivery in order to achieve uniform coatings with minimal volume (less waste). In order for these techniques to work there must be hardware used to detect the precise instant that photoresist comes in contact with the wafer. Variations in substrate reflectivity cause variations in the detection of this event, leading to photoresist thickness and uniformity. This invention describes a hardware modification to allow compensation for wafer reflectivity which will lead to consistent coating on all substrates.

**4. Detailed Description of Invention**

Describe the structure, function and/or method of the invention in detail. Here, go in sufficient detail for someone to understand and be able to practice your invention. At a minimum, this would be from 1 to 2 pages. Use as many pages as required to get your idea across. Use Supplemental Sheets (Section 18) as needed.

**5. Conception of the Invention**Date of conception: Date RedactedLocation of conception: San JoseDate of first written description: Date RedactedLab notebook no: 250Page(s): 12-13

Please attach copies of all pertinent lab notebooks or equivalent. They should be signed, dated and witnessed by two other people who have read and understood the description of the invention.

**6. Reduction to Practice**

Reduction to practice is demonstrating that an invention merely works with evidence such as working models, prototypes or simulations. Reduction to practice is not necessary to file a patent application.

Date of any such demonstration:

Location of demonstration:

**7. Project/Release/Sale Information**

A sale, offer for sale, public showing or release of the invention may affect COMPANY's right to patent the invention. Submit this form even if a public

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sale, showing or release has occurred.

Field of technology (e.g., encryption, microprocessor, audio)

Project name and description:

Product name and model number:

Please list docket numbers of all other invention disclosures that are related to this one:

Estimated/actual date of first public release or showing of invention or product incorporating or using the invention: None

Estimated/actual manufacturing release date of invention  
or product incorporating or using the invention:

Estimated/actual date of offer for sale of product incorporating or using the invention:

**8. Publication of the Invention**

Publication of a description of the invention may affect COMPANY's right to patent the invention. Submit this form even if publication has occurred.

Has a description been published or is it scheduled to be published? *No*

If "Yes," when and to whom

Has a description been disclosed or is it schedule to be disclosed? *No*

If "Yes," when and to whom?

Was a Non-Disclosure Agreement used *No*

If "Yes," please attach copy

**9. Government Agency Contract**Was this invention made under a government agency contract? *No*

If "Yes," government agency contract number:

**10. Joint Development or Development Contract**

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*DA*

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Was this invention jointly developed with inventors from another company? No

If "Yes," please identify the company and/or non-COMPANY inventors:

Was the invention tested, constructed or conceived pursuant to the performance of a development contract with another company? No

If "Yes," please identify the contract and its location

**11. Related Art**

Is this invention an improvement of an existing COMPANY product? No

If "Yes," identify the existing product:

Closest known related art:

What was the problem to be solved?

How had others attempted to solve it before you?

What were the problems or disadvantages with prior solutions?

**12. Reference Materials**

List any printed publications, patents, patent applications or any other materials you are aware of which provides background material and/or prior art for your invention.

Date of Publication

Author

Title

Use Supplemental Sheet(s) for additional Reference Materials exceeding five Entries.

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☐☐☐☐**13. Licensing/Competitive Analysis**

Is this a licensable technology?

Yes

If "Yes," name the fields in which this might be licensed:

Semiconductor Manufacturing, Device Manufacturers

If "Yes," name the companies which may possibly be interested:

Dia nippon Screen, SVG, TEL**14. Drawings of the Invention**

Please submit clear drawings which illustrate the invention using the supplemental sheets.

**15. Attorney/Agent**

If there is a particular patent attorney or agent with whom you would like to work on this disclosure, suggest his/her name.

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☐☐☐☐**16. Signatures of Inventors**

This Invention Disclosure Form is submitted pursuant to your employment agreement with COMPANY. Use a Supplemental Sheet if there are more than 5 inventors. Please sign and date below and be certain that each page of this disclosure has been initialed by each inventor.

Signature:

Daniel C. Baker

Date:

Date Redacted

Full Name of Inventor 1

Signature:

Date:

Full Name of Inventor 2

Signature:

Date:

Full Name of Inventor 3

Signature:

Date:

Full Name of Inventor 4

Signature:

Date:

Full Name of Inventor 5

**17. Read and Understood**

This Invention Disclosure Form consisting of 7 pages has been read and understood by:

Signature:

Tammy ZhengName: TAMMY ZHENG Name of Witness 1

Date:

Date Redacted

Signature:

Liming ZhangName: Liming Zhang Name of Witness 2

Date:

Date Redacted

Witnesses, please initial all supplemental pages.

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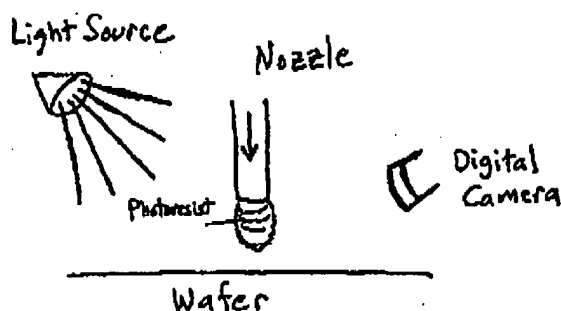
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## 18. Supplemental Sheet(s)

Add necessary description supported by relevant documentation. Such documentation may include experimental results, xeroxed copies of pages of Lab Notebooks and the like, electronic files, plots. Be as thorough as possible in your disclosure. A thorough disclosure greatly assists the attorney or agent in preparing a patent application.

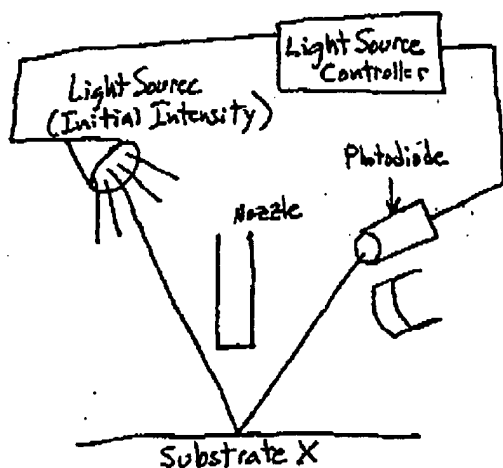
### Primary Invention:



### Current System

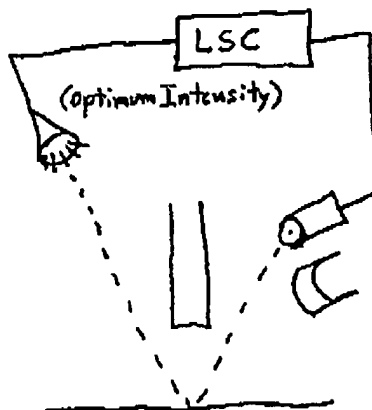
Variation when substrate is dark (more resist dispensed) to overly sensitive on bright substrate (less dispense). Signal may also be to dim or washed out, causing mechanism to fail.

\* Modified System : Photodiode detector is added to check reflectivity of each wafer prior to photoresist dispense. Illumination of light source is adjusted automatically to optimum level. Photoresist is dispensed



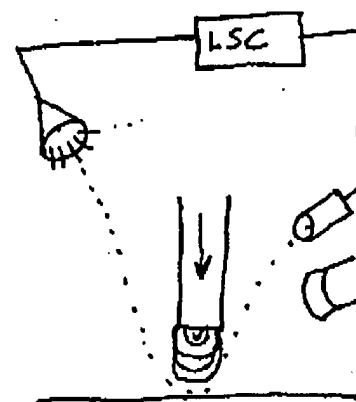
STEP-1

Reflectivity Measured



STEP-2

Reflectivity Adjusted to Predetermined optimum



STEP-3

Photoresist Dispense

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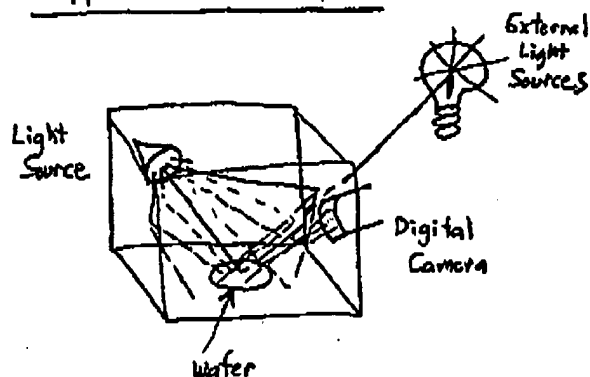
Invention Disclosure No:

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### 18. Supplemental Sheet(s)

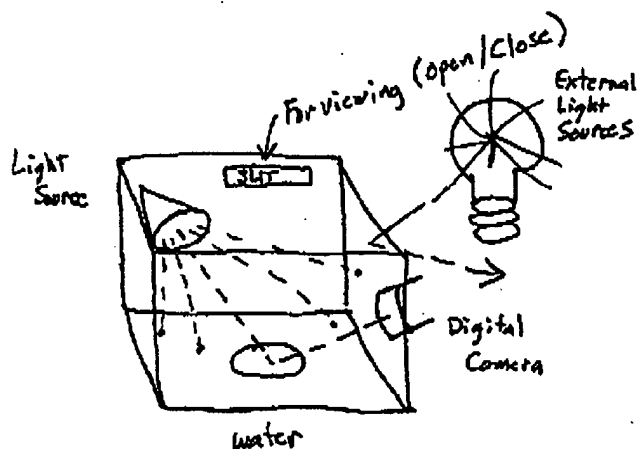
Add necessary description supported by relevant documentation. Such documentation may include experimental results, xeroxed copies of pages of Lab Notebooks and the like, electronic files, plots. Be as thorough as possible in your disclosure. A thorough disclosure greatly assists the attorney or agent in preparing a patent application.

### Supplemental Invention:



### Current System

Coat module is enclosed area with both reflective surfaces and transparent windows. This allows stray light from internal and external sources to affect the detection system.



### Modified System

Reduce transparent window area (slits) and coat all surfaces with non-reflective material. Signal noise is reduced and substrate reflectivity measurement will be consistent.

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